Royal HaskoningDHV Digital

Bits & Pieces

Uniting the physical and digital world for a more sustainable Europe – *a Dutch perspective*

Executive summary

The human impact on the earth and its resources is intensifying by the day. Challenging conditions are making it harder to meet the growing population's requirements for space, food, energy and materials, and governments and organisations are setting increasingly ambitious sustainability targets, which we all have an obligation to serve.

There's no single, easy way to hit these targets. To succeed, leaders will need to rethink and reinvent the complex systems, business models and regulations that underpin our society. And large-scale digitisation will be vital in achieving the level of analysis and action required to find the optimal solutions.

A lack of collaboration creates barriers to change

As we strive to use digital technologies to create a new, more sustainable future, there are numerous barriers standing in the way of progress.

Often, siloed industries and domains miss out on key opportunities gained through collaboration; stakeholders make decisions with limited insight; vital digital infrastructures can rapidly become cluttered and expensive; and locally developed solutions can't scale to national and international applications.

Resolving these inefficiencies will mean changing the way the world approaches digitisation. Historically, it's been a bottom-up process, where a lack of collective vision has prevented a holistic approach to progress. But to make a real impact on the universal challenges of climate, pollution, and resource availability, these initiatives will have to span organisations, disciplines and even countries.

A holistic approach to digitisation

We're already seeing examples of top-down initiatives emerging across Europe, including the European Commission's European Digital Strategy, the Dutch Digitisation Strategy and the Centre for Digital Built Britain. But for these initiatives to work most effectively, they need to integrate with existing bottom-up approaches. An integrated framework for digitisation will include four layers:

- ▼ A collective vision and philosophy that connects culture, values and ideas
- ▼ A policy layer which translates the vision and its principles into laws and regulations
- ▲ Linear connections where stakeholders collaborate across disciplines
- ▲ Local initiatives, where solutions are tested in real-life scenarios.

The Netherlands in particular is making strong headway in this push for a collaborative digital future. With a large population in a comparatively small area of land, the Dutch have had to overcome spatial, economic and social challenges faster than many other European countries. Supported by its strong digital infrastructure, the Netherlands can set an example for how to begin developing this four-layer approach to digitisation.

However, there is still a lot of work to be done around creating a holistic vision for progress, sharing insights between domains, and democratising data access.

Creating a 'National Digital Council' would be an effective way to overcome these hurdles and coordinate digitisation projects that can scale efficiently. This council would advise the Dutch government on the best way to approach digitisation, and coordinate initiatives across industries and disciplines, including smart cities and the development of a national digital twin.

With digital twins, Europe can model its sustainable, practical future

Digital twins connect the physical and digital worlds in a way that no other solution can. They create an efficient, adaptable source of reliable data that provides a single version of the truth – whether for static locations and assets, or dynamic situations like traffic flows, crowds and energy production. This is vital in supporting democratised data access, enabling collaboration between industries and disciplines, and reducing the amount of clutter in our digital infrastructure – each of which is integral to building an integrated framework for digitisation.

Establishing a national digital twin will require openness and democratic values, a commitment to building a shared ecosystem where each participant can connect their own systems, and the adaptability to grow in size and scope as requirements change.

Once the principles of a national digital twin have been established, leaders can work on aligning existing initiatives, and sharing data, insights and resources to ensure each programme is working towards the greater good as well as individual aims.

This model will have a dramatic impact across Europe. Embracing digitisation through living labs, smart cities, digital twins and more is crucial to ensuring the long-term sustainability and efficiency of our society.

In this paper, we outline in detail the challenges of large-scale digitisation, and how collaboration between leaders, organisations and disciplines can overcome them.

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